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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/808,472	03/14/2001	David M. Pepper	B-3807 617493-8	3552

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EXAMINER

ALLEN, STEPHONE B

ART UNIT PAPER NUMBER

2878

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/808,472

Applicant(s)

PEPPER ET AL.

Examiner

Stephone B. Allen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other:  |

### **DETAILED ACTION**

Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Claim Rejections - 35 USC § 112***

Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 4, the phrase the optical beam "having information content" with a minimum signal frequency component is unclear. What "information" is carried by or applied to the beam? Is this information intensity or actual information?

Claims 2-5 are indefinite due to their dependency.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12 and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Monchalin et al. (Monchalin) in view of applicant's admitted prior art Figure 1 (AAPA).

Regarding claims 1, 4 and 14, in Figure 3 of Monchalin all of the features as previously discussed in paper no. 5; Monchalin does not expressly disclose an optical delay device arranged to receive the second component, and which imposes an intentional delay in the second component of the optical beam. Further, the two existing optical components 114', 116 are not expressly taught as being in quadrature. However, it is well known in the art to use optical delay devices in such systems, to obtain ideal phase relationships between two optical beams. AAPA shows a fiber optical interferometer utilizing a multi-mode delay optical fiber for imposing a delay optical fiber for imposing a delay in one beam path between a beam splitter and a combiner. It would have been obvious for one of ordinary skill in the art to provide such a delay device to either beam path 110a or 100b in the system of Monchalin shown in Figure 3, in order to control the phase relationship between the beams and to ensure that they are in quadrature.

Regarding claim 2, in Figure 3 of Monchalin all of the features as previously discussed in paper no. 5; Monchalin does not expressly disclose the use of a quarter wave plate disposed in the path of the first component 100a of the laser beam 100 (and optical beam), wherein the first and second components of the laser beam correspond to the first and second components of the optical beam. However, AAPA shows a quarter wave plate provided in front of a laser before the beam becomes incident on the beam splitter for converting the light from the laser. It would have been obvious for one of ordinary skill in the art to provide a quarter wave plate in the first or second optical

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path of the modified apparatus of Monchalin, in order to impose an ideal polarization between the beams.

Regarding claim 3, the delay imposed by the delay in the modified apparatus of Monchalin is not specifically taught as being greater than an inverse of the minimum signal frequency component. However, it would have been obvious to configure the delay means of AAPA to exhibit this property, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 5, while the modified apparatus of Monchalin does not specifically teach the transmitter which produces the input optical beam as being implemented in an optical communication system, it would have been obvious to one having ordinary skill in the art to have used this component in optical communications, since this is only a matter of intended use.

Regarding claims 6, 8, 18 and 19, in Figure 3 of Monchalin all of the features as previously discussed in paper no. 5; Monchalin does not expressly disclose a delay means for delaying the second beam by a period of time which is greater than inverse of the minimum signal frequency component, and therefore the first and second beams are not expressly taught as being not co-propagating and co-polarized immediately after the second beam is delayed by the delaying step. However, it is well known in the art to use delay devices for this purpose. AAPA discloses a multi-mode delay fiber loop, and using a beam splitter and a combiner for imposing a delay between the beam paths and thereby creating a predetermined phase relationship. It would have been obvious to

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provide such a delay means to an optical path of the means of Monchalin, in order to control and impose a phase-quadrature relationship.

Regarding claim 7, 9-12, 15-17 in Figure 3 of Monchalin all of the features as previously discussed in paper no. 5.

Regarding claim 13, the modified Monchalin includes a beam splitter and a rotator arranged in the paths associated with the first and second light beams.

Regarding claim 20, in Figure 3 of Monchalin all of the features as previously discussed in paper no. 5, Monchalin does not expressly teach providing a means for delaying the second beam by a period of time which is greater than an inverse of the minimum signal frequency component. Also, the beams exiting the combiner are specifically disclosed as being in quadrature and respectively equal to the difference of the respective optical phases of the scattered first beam and the delayed second beam and the difference of the scattered delayed second and the first beam with one of the emitted beams possessing an optical wavefront equivalent to the first scattered beam, and with the other of the emitted beams possessing an optical wavefront equivalent to the second delayed beam. With regard to imposing a delay in one optical beam path, it is well known in the art to use delay optical fibers for this purpose as shown in AAPA. It would have been obvious to provide this delay to Monchalin such that the phase relationship between the two optical beams was made to be ideal, such as in quadrature. Further, it would have been obvious to configure this delay means to delay the second beam by a period of time which is greater than an inverse of the minimum signal frequency component, since it has been held that discovering an optimum value

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of a result effective variable involves only routine skill in the art. With regard to the phase difference output, it would have been obvious to configure the beam combiner, optical delay fiber and other phase-affecting optical components in the system of Monchalin to produce beams equal to the difference as claimed in order to provide optimal surface detection/inspection properties of the beams, through phase relationship control.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephone B. Allen whose telephone number is (703) 308-4828. The examiner can normally be reached on 9:00-17:00 Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (703) 308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
Stephone B. Allen  
Primary Examiner  
Art Unit 2878

sba  
June 16, 2003